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內文：

Introduction

1. Radical neck dissection (RND) provides a safe and reproducible method of comprehensively addressing cervical lymph nodes.
2. Recurrence rates according to the bulk of the disease present, ranging from less than 10% in the N0 neck to over 70% in patients with positive nodes at multiple levels.
3. Nahum described a syndrome of decreased range of abduction in the shoulder joint and pain following RND which has been termed 'shoulder syndrome'.
4. The ability to harvest neck nodes in an operation that limits morbidity has led to a more proactive approach to cervical disease with many clinicians advocating elective neck dissections in those patients whose primary site characteristics would suggest a high rate of occult metastasis.
5. This discussion will present an evidence-based approach to the care of patients undergoing neck dissection beginning with pre-operative evaluation and peri-operative care prior to consideration of surgical technique itself.

General considerations

Additional immunosuppression caused by conditions such as diabetes or relative malnutrition should be optimized since they predispose to complications including as wound infection.

Pre-operative evaluation

1. In appropriate cases enhancement of nutritional status with either a percutaneous or radiologically-inserted gastrostomy should be considered since this will not only help to reverse any malnutrition pre-operatively but will also ensure prompt enteral feeding in the post-operative period.
2. Cessation of several days greatly improves ciliary flow but post-operative respiratory morbidity is only reduced if tobacco is avoided for a minimum of two weeks.
3. Excessive alcohol use amongst head and neck cancer patients is common with both minor and major post-operative withdrawal symptoms increasing morbidity.

Anaesthesia

1. There are theoretical advantages to using low-molecular weight as opposed to standard low dose heparin in the prophylaxis of deep vein thrombosis and pulmonary emboli since it lessens bleeding complications, has a prolonged duration of action and is less likely to induce thrombocytopenia
2. Goal-directed volume expansion during the intra-operative period using oesophageal Doppler has been shown to improve not only stroke volume, cardiac output and post-operative recovery but also reduces the time until patients are declared medically fit for discharge.
3. The use of LidCo for fluid optimisation in the intensive care setting is well-established.

Post-operative care

1. Early hypertension may follow RND possibly as a result of either carotid sinus denervation or a Cushing's reflex associated with intra-cranial hypertension
2. Prolongation of the Q-T interval has been reported following right sided neck dissection and under such some circumstances special attention should be given to potassium levels
3. Aggressive respiratory support is mandatory in encouraging patients to clear secretions and is especially important in the tracheotomised individual in whom pain may further limit pulmonary function.

Surgical technique

1. Asepsis
 - Although preparation of a surgical site prevents wound contamination by removing transient pathological bacteria and decreasing resident flora counts, good surgical technique with minimal tissue damage still has a role to play.
 - Reducing the length of peri-operative treatment with intra-venous antibiotics limits the development of drug-resistant bacterial infection, e.g. *Methicillin-resistant Staphalococcus Aureus*
2. Incisions
 - Trifurcations or incisions parallel to the carotid artery should be avoided particularly in salvage cases after radiotherapy.
 - In the latter instances some surgeons prefer the security of a McFee incision which avoids some of the potential problems of three-point access.
3. Flap elevation and closure
 - Flaps should be elevated in the sub-platysmal plane in order to maximise their blood supply unless local disease dictates otherwise.
 - Skin flaps should not be allowed to dry out and if necessary before closure 2-3 mm of the edges should be excised.
 - A tracheostomy should not be incorporated into the main surgical field since not only may sepsis become a major consideration but also the ability to preserve vacuum for drains at closure may be compromised.
 - Careful approximation of tissues
4. Progression of neck dissection
 - Divide the fascia overlying the sternocleidomastoid muscle → omohyoid muscle → upper deep cervical chain → internal jugular vein (IJV), carotid system and vagus nerve
 - Anterior belly: hypoglossal nerve. venous plexus
 - Posterior belly: a safe area lateral to the upper end of the internal jugular vein.
 - It is important to identify this fascia since it not only protects the underlying neural structures but also provides a plane along which dissection is readily facilitated.
5. Air embolus
 - This is a rare event which can occur following injury to the IJV.
 - Large emboli can produce sudden falls in end-tidal carbon dioxide and arterial blood pressure.
 - Local pressure should be applied and the anaesthetist informed so the patient can be placed in the Trendelenburg position and rotated to the left.
 - In severe cases attempts can be made to pass a catheter and aspirate air from the right side of the heart.
 - Hyperbaric oxygen therapy
6. Pneumothorax

Any tears in pleura should be closed and their integrity tested by hyperinflating

the lung, placing the patient in Trendelenburg position and irrigating the area with clear fluid to observe bubbles.

7. Chyle leak

- The key to treatment of a chyle fistula is prevention which demands knowledge of the relevant anatomy.
- Whereas intra-operative identification can be aided by placing the patient in the Trendelenburg position or adopting a forced Valsalva manoeuvre, post-operative leaks are usually identified when feeding is commenced.
- Multiple approaches to the treatment of an established leak have emerged including nutritional, surgical and pharmacological therapy.

8. Neural structures

- A number of techniques have been advocated to eliminate such neuroma formation including ligation of the cut edge, cautery, alcohol injection and burying the cut end of nerves into muscle.
- Consistent and rapid identification of the SAN in the upper neck can be facilitated by a method rely on the identification of Erb's points.
- Whereas the ansa cervicalis is frequently sacrificed the vagus, lingual, hypoglossal and marginal mandibular branch of the facial nerves should be identified and preserved.
- The hypoglossal nerve can be identified crossing the external carotid artery and then emerging from underneath the posterior belly of digastric on the hyoglossus muscle.
- Paralysis of the cranial nerves occurs only rarely (less than 2% of neck dissections) and as such they are difficult to predict.
- Brachial plexus lies between scalenus anterior and medius muscles as it crosses the posterior triangle. Knowledge of its location is important in preventing further readily avoidable complications.
- Intentional transection of the vagus nerve can result in intra-operative cardiac problems of which the anaesthetist needs to be forewarned.

9. Drains

- Drainage is used following neck dissection to prevent the collection of fluid and to aid healing.
- The placing of drainage should be carried out separately from the incision to reduce the risk of infection.
- The evidence suggests that active drainage should be employed in both free flap and non-free flap cases.

10. Extended neck dissections

- Major vessel involvement should be assessed pre-operatively with appropriate imaging, be it contrast-enhanced computed tomography, magnetic resonance imaging, magnetic resonance angiography, ultrasound, Doppler or conventional angiography.
- Selective sacrifice of the common or internal carotid arteries during extensive cervical operative procedures or their compulsory ligation after exposure for haemorrhage post-operatively can produce some of the most serious complications in head and neck surgery.
- Balloon test occlusion with hypotensive challenge offers a simple and reliable method of pre-operative risk assessment when internal carotid artery resection is planned for regional control of disease in advanced head and neck cancer.

Special considerations

1. *Bilateral neck dissection*
 - Increased morbidity and mortality has been demonstrated in patients undergoing simultaneous bilateral neck dissections.
 - Raised intra-cranial pressure (ICP) occurs following bilateral IJV ligation with secondary systemic hypertension (Cushing's reflex).
 - Even in cases of bilateral neck dissections where one IJV is preserved post-operative imaging demonstrates thrombosis in up to 30% of cases.
 - If both IJVs are to be transected then preservation of conduits in the external venous system should be attempted wherever possible, eg external jugular veins.
 - Significant swelling may compromise the airway in the post-operative period the possibility of a prophylactic tracheostomy should be entertained.
2. *The previously treated neck*
 - Previous radiation encourages fibrosis between tissue planes such that subsequent dissection can be a laborious process.
3. *Carotid blow-out*
 - This is associated with over 60% morbidity and 50% mortality.
 - Neurological sequelae of emergency ligation include hemiplegia, hemi-anaesthesia, aphasia and dysarthria.
 - If impending blow out is suspected, endovascular techniques with stent-grafts may be indicated rather than open ligation although short-term complications still occur.

Conclusion

Despite the best planning complications can still occur but their impact can be minimised by a vigilant and proactive emphasis in the entire peri-operative period.

題號	題目
1	<p>What following statement is true?</p> <p>(A) a syndrome of decreased range of abduction in the shoulder joint and pain following RND which has been termed 'shoulder syndrome'.</p> <p>(B) using high-molecular weight as opposed to standard low dose heparin in the prophylaxis of deep vein thrombosis and pulmonary emboli since it lessens bleeding complications</p> <p>(C) using oesophageal Doppler has been shown to improve stroke volume, cardiac input and post-operative recovery</p> <p>(D) Early hypotension may follow RND possibly as a result of either carotid sinus denervation or a Cushing's reflex</p>
答案(A)	出處： <i>Head & Neck Oncology</i> 2009, 1:35 page 2 of 6
題號	題目
2	<p>What following statement is wrong about anatomy of neck?</p> <p>(A) Hypoglossal nerve can identified crossing the external carotid artery</p> <p>(B) Brachial plexus lies between scalenus medius and posterious muscles.</p> <p>(C) Identification of the SAN in the upper neck can be facilitated by a method rely on the identification of Erb's points.</p> <p>(D) The posterior belly of digastric delineates a safe area lateral to the upper end of the internal jugular vein.</p>
答案(B)	出處： <i>Head & Neck Oncology</i> 2009, 1:35 page 3 of 6